

COST *and* MANAGEMENT

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BUDGETARY CONTROL IN JOB MANUFACTURING AS APPLIED TO A FOUNDRY, MACHINE AND ENGINEERING PLANT

By L. R. Bennett 186

Mr. Bennett is employed as cost accountant of the Riverside Iron Works Ltd., Calgary, and this year he was successful in qualifying for Registered Membership in the Alberta Society. This article is an abridgement of the thesis which he submitted for his degree.

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By Eric G. Taylor 208

Eric G. Taylor, who was Assistant Manager of the Industrial Relations Department of Canadian Industries Limited, has been engaged in management and industrial relations activities for the past 15 years.

Specializing in collective bargaining, Mr. Taylor participated in the negotiation of labour agreements and represented his company before conciliation and arbitration boards.

He is Professor of Industrial Organization and Administration at the University of Montreal; a member of the Canadian Management Council and the Industrial Relations Research Association.

Born at Heacham, Norfolk, England, Mr. Taylor was privately educated in England and Canada, and later attended McGill University. After 12 years in various supervisory positions with Imperial Oil Limited, he joined Defence Industries Limited in 1943, as a personnel officer and later was transferred to C.I.L. At the beginning of April this year, he joined the Brazilian Traction, Light & Power Co., Ltd.

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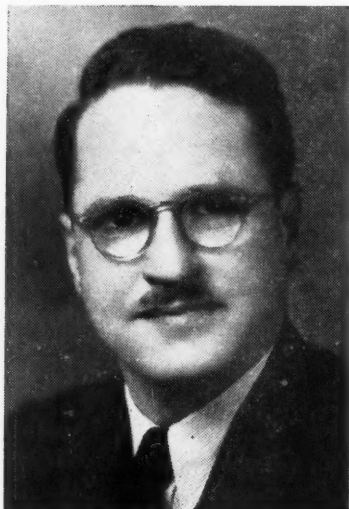
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SOCIETY NOTES



DAVID F. FILLITER,
President, Society of Industrial and Cost Accountants of New Brunswick.

THE SOCIETY OF INDUSTRIAL AND COST ACCOUNTANTS OF NEW BRUNSWICK HOLDS ITS FIRST GENERAL MEETING

The recently organized Society of Industrial and Cost Accounts of New Brunswick, held its first general meeting as an incorporated body on April 21, 1950, in St. John. At that meeting, the following executive officers and members of council were elected:—

President, D. F. Filliter, St. John; 1st Vice-President, A. R. French, Sackville; 2nd Vice-President, Murdo McLean, Black's Harbour; Secretary, G. C. Turner, St. John; Treasurer, G. H. Nichol, C.A., St. John; E. A. Smith, C.A., St. John; W. J. B. Gentlemen, C.A., St. John; O. E. Horton, Edmundston; Edmond Frenette, Moncton; W. W. B. Dick, C.A., Moncton; A. J. Fenwick, C.G.A., Bathurst.

NEW MEMBERS

Eight committees were appointed and plans were drafted for the commencement of the Society's activities in the Fall. These plans call for the formation of Chapters in St. John and New Brunswick, with some consideration also given to organizing in Fredericton, Edmundston and Bathurst.

In reporting on the progress of this thriving new organization, we could do no better than to quote from a letter just received from its president. "Probably the most noteworthy item of interest is the enthusiasm with which this Society has been received to date. At our first annual meeting which was held at a bad time of the year, from a point of view of travel, we had representatives from Edmundston, Bathurst, Black's Harbour, Sackville, Moncton and Fredericton. All of these members arranged their own time and transportation to be here and as it turned out, the roads were in particularly poor condition; but this did not appear to discourage any of them. With people of this calibre supporting our Society, I cannot help feeling confident that we will continue to go ahead successfully and while we have only scratched the surface at the present time, I feel quite sure that in years to come, the Society of Industrial & Cost Accountants of New Brunswick may be classified as one of the smallest affiliated societies, but certainly one of the strongest and most enthusiastic."

New Members

CALGARY CHAPTER

William E. Martin, Alberta Wheat Pool

FORT WILLIAM - PORT ARTHUR CHAPTER

J. N. Kross, Marathon Paper Mills of Canada Ltd., Marathon
N. R. S. Engelhardt, Marathon Paper Mills of Canada Ltd., Marathon
J. A. Kristinson, Marathon Paper Mills of Canada Ltd., Marathon
G. S. Smythe, Marathon Paper Mills of Canada Ltd., Marathon
R. P. Ungar, Marathon Paper Mills of Canada Ltd., Marathon
I. H. Morash, Marathon Paper Mills of Canada Ltd., Marathon

HAMILTON CHAPTER

J. C. Beveridge, Chagnon & MacGillivray
John Hanas, R.C.A.F., Mount Hope
E. L. Wilson, Department of National Revenue, Tax Div.
W. Pierce, The Eaton Knitting Co. Ltd.

KENT COUNTY CHAPTER

W. H. Tibbo, Chatco Steel Products, Ltd., Tilbury

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KINGSTON CHAPTER

D. H. Johnston, Canadian Locomotive Co. Ltd.
T. B. Turcotte, Canadian Locomotive Co. Ltd.
E. D. Crowley, Canadian Locomotive Co. Ltd.
C. H. Fournier, Canadian Locomotive Co. Ltd.

LONDON CHAPTER

Alfred Miller, Robinson Industrial Crafts Ltd.

NIAGARA CHAPTER

William C. Hesler, B.Com., John Deere Welland Works, Welland

PETERBOROUGH CHAPTER

J. A. Skitch, Canadian General Electric Co. Ltd..

TORONTO CHAPTER

A. J. Noon, Tip Top Tailors Ltd.

WINDSOR CHAPTER

Fraser Davenport, Truscon Steel Co. of Canada Ltd.

NON-RESIDENT ONTARIO

William Walsh, National Sea Products Limited, Halifax
J. P. Dufour, S.S. "Rincon Hills", Portland, Me.

Chapter Notes

BAY OF QUINTE

The final meeting of the season was held on May 15, and was an outstanding affair. A good attendance was on hand to hear H. R. Nurrish, Secretary-Treasurer of R. L. Crain Ltd., speak on "Management Control by Budgets". Art Lockley, appointed by Chairman Les Lennox, substituted for Mark Vanner, in the capacity of song leader.

Messrs. Bob Taylor, Art Lockley, Bill Cronin, Wilf Richardson and Les Lennox were elected as Directors for the year 1950-51.

REGINA - MOOSE JAW

The members were most fortunate in having Dr. Stewart Basterfield, Dean of Regina College, as their guest speaker at the May meeting. The subject, "Venture in Steel", was a delightful departure from the usual program and was of intense interest.

Mr. G. T. Lane presented his report as Chairman of the Nominating Committee, and the following were elected Directors for the 1950-51 season:—

From Moose Jaw:—D. F. L. Flegel, G. T. Lane, T. P. Burke, J. P. Gilas.

From Regina:—W. J. Arnall, W. T. Read, J. H. Gresmer, R. B. Van Iderstine, D. Shaw.

WINDSOR CHAPTER

The April meeting was one of the outstanding events of the season's activities. It was the Annual Joint Meeting with the Detroit Chapter of

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N.A.C.A., and as is usual for this occasion, there was an excellent attendance with 170 present.

Chairman Frank Bear introduced Mr. Alva Dind, President of the Detroit Chapter of N.A.C.A., who in turn introduced the speaker of the evening.

Mr. Paul E. Hamman, partner of Touche, Niven, Bailey & Smart, addressed the meeting on the subject, "Practical Budgeting".

Current Literature Digest

By W. W. HENDERSON, R.I.A.

INTERNAL AUDIT PROCEDURES FOR CONTROLLING COSTS—by W. A. Walker, C.P.A.,
The Journal of Accountancy, May, 1950.

Mr. Walker's article views the internal audit of costs from two distinct directions:

1. Review of controls over expenditures and the use of goods and services purchased;
2. Review of the adequacy of the cost accounting.

Payroll, direct and indirect materials, services and purchasing and accounts payable procedures are specifically treated. Internal controls and general departmental organization with respect to these elements and functions are discussed.

The author states as his opinion that "we must not allow cases of fraud which are revealed from time to time to panic us into going control crazy." He says that "many systems contain 'trimmings' which while appearing as controls are too expensive to justify use." His view is that "what we want is a system that can be beaten only by collusion."

Mr. Walker subscribes to the belief that "the greatest feasible split up of duties is desirable," in order to obtain better internal control.

In the matter of reviewing the adequacy of cost accounting. Mr. Walker stresses proper evaluation of standards used, the proper analysis of departmental operating statistics (so that significant trends are set forth), and "the appraisal of the soundness of the principles and internal control measures contained in the procedures governing distribution."

STANDARD HOUR INCENTIVE DOUBLED OUR MAINTENANCE OUTPUT—by Palmer
Bliss, in the "Factory", May, 1950.

This is an incentive wage plan applied to maintenance staff.

Standards are set up for the elemental operations comprising different maintenance jobs. However, the degree of effort and time required for each operation in different jobs may be expected to vary; and the standard

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must be weighted accordingly. Each crew of maintenance men is attended by, what the author terms, an "applicator". This man's function is to estimate the weighting factor and to set up the standard in the light of each actual job. He understands and interprets the formulae in their application to standards' creation, and does so right on the job.

Four principal classifications of job analysis were made:—(1) initial trips, (2) trips for material, (3) basic operations, and (4), miscellaneous operations. Certain allowances are made under special conditions.

Incentive premium is paid after performance exceeds $66\frac{2}{3}\%$ of standard; but the scale of premium increases as performance approaches standard.

The author's company claims a reduction in maintenance staff of almost 50% as a result of the incentive system. While apparently somewhat complicated in its conception and application, the system undoubtedly will appeal to many readers as possessing worthwhile potential, and is well worth their further investigation.

COSTING OF PAPER MANUFACTURE—by George Roddick, F.C.W.A., F.C.I.S., F.A.C.C.A., The Cost Accountant (England), May, 1950.

In addition to explaining methods of costing used in the paper industry, considerable explanation is given in the article to the mode of manufacture. This provides a bridge from which the uninitiate to the industry may view further proceedings with reasonable understanding. The description of manufacture will in itself prove interesting.

The author states that "paper costing falls into two chief classes. Firstly, costing of processes, wherein direct expenditure is applied to each department to obtain a process cost per unit of output, and secondly, costing of jobs or individual makings or lots of paper wherein raw material is allocated to jobs, process rates are applied, and after the addition of overheads, packing material charges and freight, the total cost of each grade or separate order is found and can be compared with the selling price."

The author has further clarified his presentation by the illustration of a specimen job cost sheet.

FACTORY ORGANIZATION—by J. E. Smith, A.C.W.A.—The Cost Accountant (England), May, 1950.

This article deals with organization in its defined sense as well as with some of the functions with which organization in a manufacturing plant is initially concerned; namely—planning of equipment, lay-outs and production; and control.

Organization is defined as "the arrangement of parts that make up the whole." In consequence considerable flexibility may be expected in the application of organization in a factory.

Equipment acquisition, plant lay-out, and the production system all may be viewed as parts of the whole. However, the author's treatment of planning is restricted to the initial plan rather than to the evolution or design of plans to fit "line" authority. "Control" is described as "the technique of setting plans in motion, and of observing and recording

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progress in such a manner as to keep up continuous comparison between planned and actual results."

A suggested basis of analyzing equipment needs is advanced. Consideration is given to replacement equipment therein. Several precepts concerning the institution of production planning are given.

However, the thesis of the article is organization, and any such subdivisions of subject are introduced solely for the application of organizational treatment.

This article will prove interesting and profitable reading to most Industrial Accountants.

THIS SIMPLE PLAN HIT 85% COVERAGE IN THE FIRST FOUR MONTHS—by Raymond K. Hovel, "Factory", May, 1950.

Mr. Hovel describes the installation of an incentive wage plan in a shop of 115 employees. The installation was an accelerated one—actually in operation 3 weeks from the time of its first mention to the employees.

Supervisory personnel was contacted first—then the shop as a whole. A written description in simple but comprehensive terms was provided each staff member. A real "selling" effort was made, and an appeal was directed to the personnel asking their fullest co-operation.

Time study men were appointed from within their own staff. A skilled machinist, a foreman and an assembler were the appointees. An accelerated course in time study procedures was given.

Formulae were used in setting standards where similarity existed between operations on current jobs and those previously timed.

The plan itself as to direct labour is that while employees are guaranteed their base rate, they may earn premium without limitation. The implication seemed to be that the standard hour payment plan or some derivative thereof was applied.

Indirect labour and unmeasured direct labour received as bonus $\frac{1}{2}$ of the amount paid as direct labour premium. Foremen share in the indirect premium. Indirect premium is computed monthly—direct bonus weekly.

The company has secured a saving of $41\frac{1}{2}\%$ on measured work, which has an 85% incentive wage coverage. This results in a net saving on all direct labour of $37\frac{1}{2}\%$. That is for each 1 hour of direct labour now worked, the company receives the equivalent production of what used to require 1.6 hours of direct labour.

C & M ROUND-UP

FOREIGN EXCHANGE

At the end of 1949 the exchange fund account held \$486.4 million in gold and \$594.1 in United States dollars. In addition, \$36.6 million in U.S. dollars was held in other Government of Canada accounts, making total holdings of gold and U.S. dollars at the year end \$1,117.1 million.

The picture since 1947 is listed in the table included below:—

CANADA'S HOLDINGS OF GOLD AND U.S. DOLLARS

(Millions of U.S. dollars)					
	Exchange Fund Account and Bank of Canada	Other Government of Canada			Total Gold and U.S. Dollars
		Accounts	Private		
	Gold	U.S. Dollars	U.S. Dollars	U.S. Dollars	
Dec. 31, 1947	286.6	171.8	43.3	501.7
Dec. 31, 1948	401.3	574.5	22.0	997.8
Dec. 31, 1949	486.4	594.1	36.6	1,117.1

The year 1949 witnessed a further modest improvement in Canada's reserve position, official holdings of gold and United States dollars increasing by \$119 million. In 1948 they had increased by \$496 million. However, 1947 they had fallen by \$743 million.

In September, 1949, the Government of the United Kingdom reduced the value of the United Kingdom pound in terms of United States dollars by 30.5 per cent. At the same time, or almost immediately thereafter, all other currencies of the sterling area (except that of Pakistan) and the currencies of Sweden, Norway, Denmark and the Netherlands were also devalued by approximately 30 per cent.

The main purpose of the overseas exchange rate changes was undoubtedly to stimulate exports to the Western Hemisphere. By reducing the foreign exchange value of their currencies the depreciating countries sought to improve the competitive position of their producers in relation to those of countries which either did not devalue at all or devalued to a lesser extent. Since the United States and Canada are in this latter group, the depreciating countries hoped thereby to increase their sales on this continent and thus to reduce their dependence on United States and Canadian assistance.

The recent exchange rate changes serve to eliminate or reduce the discrepancies between prices in "soft currency" and "hard currency" areas. They are a direct attack on the "dollar problem" through the price system.

The elimination of price discrepancies between "soft currency" and

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"hard currency" countries makes it possible for goods to flow from the former to the latter in increased volume.

The emergence of the new structure of overseas exchange rates is a development favorable to Canada. Since the likelihood of our being able to continue to sell a reasonably large volume of goods to sterling area and Western European countries depends to a great extent on their ability to export more to this hemisphere, we must welcome a step which should enable them to increase their exports.

CAN IT LAST?

Will the present business boom continue is the \$64.00 question to-day. Many business leaders and economists say that the present level must fall off because the public cannot continue to absorb more and more cars, houses and radios. However, there are other business men who point to conditions which are new in the economic scene. The increased size of the market and the relationship between sales and incomes is quite important. An analysis of the latter factor shows that a family can absorb so much food and clothing and after income passes this subsistence level, the amount spent on houses, autos and other durable goods rises sharply.

The wages earned in Canada in 1939 amounted to 215 million. This had risen by 1949 to 636 million. In other words, the Nation's national income had almost tripled in the 10-year period. The cost of living index from a base of 100 in 1939 has risen to 162 in 1949. This should, therefore, have produced a fair backlog of purchasing power. Total bank deposits in 1937 amounted to \$2,840 million. In 1947 this had risen to \$7,237 million or 2½ times the 1937 figure. Despite the tremendous post-war spending in the period 1947 to 1950 the deposits in March this year had jumped another million to a grand total of \$8,307 million.

The immediate outlook for business seems quite favourable. U.S. demand for Canadian goods is at a high level and, of course, as long as the American industrial picture remains at the present high level, prospects for exports are good. All in all, it seems that there is an excellent chance that our present prosperity may continue.

MANAGEMENT TRAINING

The School of Business Administration of the University of Western Ontario is conducting for the third year a Management Training Course.

The primary objective of the program is to prepare men for the assumption of wider responsibilities in the field of business. A second objective of almost equal importance is to improve man's performance in his present job. The course is open to non-university men as well as those holding degrees.

An impressive list of business leaders and university professors from the U.S. and Canada compose the faculty.

During the five weeks—July 31 - September 1st, there will be one hundred class sessions. Forty will be devoted to administrative practices. This course will be under the direction of Prof. J. C. Bailey, of the Harvard Business School, and deals with the effective working out of business problems in management. The case problems in this course are drawn

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from a variety of businesses and touch on the more significant phases of each problem at middle and senior management levels.

The remaining sixty sessions involve a series of executive problems on the major functional areas of business—marketing, production, finance, controls and personnel administration. The purpose of this phase of the course is to give a broad appreciation of the policy problems confronting a business.

Nearly all the class sessions will take the form of discussion groups. At the start of the program the student will be given a series of cases. Each of these is a description of a particular business problem or situation. Before each class the student will be expected to read and analyze the case assigned. In class the case will be discussed under the guidance of a Faculty leader.

Number attending this year will be over 70 in an age group from 35-53. Of this group, approximately 15 are in accounting positions. The average earnings of the group are just under \$8,000 per annum.

The value of such a course to accountants for example would be immense. Too often they are narrow specialists on finance and plant economics. The very nature of their work leads to the development of a high degree of logical and accurate thought, but is frequently confined within the limits of the debit and credit control theory. Five weeks of intensive study on finance and more particularly the other major functions of industry could greatly widen the area of their thinking. This would benefit them in their own special field as well as prepare for the assumption of general management positions.

Western University is to be congratulated on their progress in this field to date, and the contribution that will eventually result to Canadian business.

Budgetary Control in Job Manufacturing as Applied to a Foundry, Machine and Engineering Plant

By L. R. BENNETT, R.I.A.

This article is a thesis submitted by the author to the educational committee of the S.I.C.A. of Alberta, for the R.I.A. degree. It is more embracive than the subject would imply in that it describes the complete job cost system for a foundry and machine shop working to specific orders. Emphasis, however, is given to the control features through the use of the budget which are usually found to be most difficult of attainment in job manufacturing.

INTRODUCTION

The golfer who plays against par and thus removes himself from the variable influence of his opponent's game budgets his play. In a business which operates on a budget, statements of prior periods, which contain every mistake made in the past, and which reflect conditions not necessarily existing, are replaced as measuring sticks for current operations, by scientifically compiled forecasts. Records of past performance may be very valuable, and consulted frequently in budget building, but study is also made of the effects of current conditions and future prospects. As the business progresses through the period covered by the budget, comparisons are made at intervals between the actual operations and the budget forecast. The principle of exceptions is employed, and emphasis placed on trends away from the budget by stating the facts in terms of variances of many kinds.

If the guidance to a predetermined profit goal provided by a budget were not in itself sufficient reason for recommending it, many other arguments have been advanced in its support. The careful consideration given to the possibilities of the market, to plant layout, tooling, and methods, will reveal sales opportunities, and possible improvements in manufacturing processes, which would be overlooked otherwise. The budget is the focal point of managerial attention resulting in better co-ordination between departments, clear definition of the responsibilities of de-

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partment heads, the elimination of overlapping of responsibility, and uniform policies towards all departments which will in turn foster a healthy team spirit. Seasonal variations in production will become smaller. Waste and unwarranted expense will be discouraged. Better control of stock will reduce the size of inventory carried and release capital for more active service. A month by month check on the judgment of executives is provided.

This paper deals with an operating budget, side by side with which it is recommended that a financial budget be run. The financial budget will use sales budget figures, and ratios of past collections to sales to state cash income by periods. Calculations of disbursements to take care of budgeted expenses will be made. With this information cash positions and financial requirements for the months ahead can be forecast, as a result of which the treasurer will be able to arrange finances more economically and with greater convenience.

Budgetary control is not widely applied to job manufacturing, probably because the relationship between budgets and standards suggests that the production of a business should be standardized, or of a repetitive nature, before the most benefit can be derived from a budget. While the handling of certain aspects of the budget are made more difficult when goods are made to order, nevertheless standards can be set for a large portion of the activities of a job manufacturer, and the business as a whole can be controlled by a budget, with all its attendant advantages.

THE BUSINESS

While a wide range of businesses may be classified job manufacturers, and the principles advocated may be applied just as widely, they are focused here on a plant producing a variety of iron and steel products, from rough castings and structural steel to mining and industrial machinery.

The producing departments are—the Engineering department, the Pattern shop, the Foundry, the Machine shop, the Forming shop, and the Assembly shop.

The Engineering department, as distinguished from the Planning department, is considered a producing department. The greater portion of its labor, furnishing plans and specifications for customers' work is a direct cost of production,

BUDGETARY CONTROL IN JOB MANUFACTURING

chargeable directly to the jobs going through the department and in proportion to the time spent on each. The time spent on plant engineering, etc., is charged to overhead in the same manner that indirect labor of any producing department is.

The Pattern shop makes and repairs all wooden patterns and coreboxes for use by the Foundry in forming moulds and cores for their castings.

The Foundry also melts the pig iron, scrap, and alloys from which iron and steel are made, and pours the melted metal into the moulds to form castings. It subjects the castings to heat treatment to normalize them, and cleans them by sandblasting, tumbling, chipping and grinding.

Two departments share the Foundry—the Iron Foundry, and the Steel Foundry. Their activities are similar enough that one superintendent can control them, but there are differences, such as the electrodes and power consumed by the electric steel furnace, as opposed to the natural gas used for fuel in the iron cupola, which require that for proper costing, we charge individual costs to one or the other, or in some cases we may apportion them.

In the Machine shop castings, forgings, and other forms of steel, iron, and bronze, are turned, drilled, shaped or ground, the grinding here being a much more precise operation than that employed in the Foundry cleaning room. There is a wide variety of machinery in this shop some of which is specialized, but it is mainly of a versatile character. Most machines will do many types of work, and most jobs can be done on several machines. This flexibility is important in keeping the work flowing through the shop. Although a certain job can be done more efficiently on a certain machine, it is often good business to divert it to another to avert a bottleneck if the first machine is overloaded with work of its special character.

In the Forming and Assembly shops, plates, bars, and other forms of steel are forged, cut, bent, punched, welded and assembled into the many form required by the customer. While these departments are under a single supervisor the cost accounting system requires that forges, dozers, welding equipment, rollers, etc., on whose time overhead is applied on a machine hour basis, and the manual operations, on which overhead is applied on a direct labor hour basis, be set up as separate cost departments.

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Other departments necessary to the functioning of the business, but not contributing directly to the change in form between the raw and finished products are the service departments. They are:

The Toolroom, which stores, repairs, and issues portable tools.

The Stores department which receives, stores, and issues material.

The Heating department.

The Works department, which takes care of building maintenance, repairs, alterations, etc.

The Shipping department, which includes delivery.

The Administrative department, and

The Sales department.

LIMITATION OF STANDARDS

It is possible to measure the normal capacity, which is somewhat less than maximum capacity, of the plant in terms of tons of castings, machine hours, and hours of direct labor for the various producing departments, and to set standards for expenses for operating the whole plant, or any department of it at any fraction of productive capacity.

We can determine the fraction of capacity actually worked by any department, and the whole plant by recording the tons of castings produced, and the machine and direct labor hours worked, and comparing these with the statement of normal capacity.

We can then compare our actual overhead costs with the standard overhead costs for operating each department at the fraction of capacity worked, and can compare the fraction of capacity worked with the budgeted objective. We can use these comparisons, expressed in terms of capacity, efficiency, and cost variances in the control of the plant.

We can also employ standards in costing metal prepared for steel and iron castings.

All this can be done with the assurance that our conclusions are accurate, for they are based on accumulated knowledge and careful calculations.

But this certainty does not extend to direct labor and direct material costs of individual jobs, as many are new to us. Control of direct costs is by comparisons of estimates with actual costs.

BUDGETARY CONTROL IN JOB MANUFACTURING

Our estimates are reliable enough to be sound basis for quoting prices, but they lack the scientific approach found in standards for a repetitive type of industry. The cost of preparing standards such as those industries use, for each job put into production, would be prohibitive. The difference in the degree of reliability attached to standards set for indirect costs, and the estimates used for controlling direct costs, dictates that variations between actual and estimated direct costs be set up in a form not controlled by ledger accounts.

Exception in the use of estimates for direct cost comparisons may be made where frequently required parts are made for stock. Analyses of past jobs will reveal that slight and immaterial dimensional variations are found in parts which are otherwise common to many jobs. If an effort is made by the engineering department to standardize parts, such as shaft bearings and mine car wheels, they can be manufactured in more economical quantities, with more convenient production schedules, and placed in stock until required. For this type of work and certain other repetitive items which are of a generally small nature, it is possible to set standards for direct costs. This work, however, does not form an important percentage of total production.

DETERMINATION OF CAPACITY

Prerequisite to the building of the budget are a determination of the productive capacity of the plant, and a market survey conducted to find out the amount of business available in the period under consideration, and the sales organization required to get the desired portion of it.

Finding the capacity of the plant is primarily a planning department function, accomplished with some help from the accounting department. Calculations are based on the normal working hours in the year.

The capacity of the entire plant may be said to be governed by four producing departments, the foundry, and the machine, forming, and assembly shops. The production of the pattern shop is geared to that of the foundry, and the production of the engineering department to that of the other producing departments. The non-producing departments are organized and tooled to keep all producing departments working at maximum capacity.

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Capacity of the foundry departments will be governed by the steel furnace and the iron cupola. Although castings of a wide range of weights and intricacy of pattern are produced by the foundry it will be found that, over a period of time, labor hours for moulding, coremaking, and cleaning, will maintain a constant relationship to tonnage produced. We use this relationship to obtain an expression of the capacities of the steel foundry and the iron foundry in terms of direct labor hours.

Direct labor in the foundry is treated in two ways: 1. direct labor to produce melted metal, accounted for on a standard basis, and, 2. direct labor for moulding, coremaking and cleaning, charged to job costs. Overhead is applied equally on these classifications of direct labor.

In determining the relationship between tonnage and direct moulding, coremaking and cleaning labor we find past records of greater assistance than when productive capacity is measured by machines and bench space. As the steel foundry and the iron foundry are separate departments each will have to be figured separately.

If a plant's production has been stabilized for many years, experience will also be a guide in figuring the amount of new work for which patterns must be made, and the amount of labor required to keep the existing ones in repair, to produce the budgeted tonnage of castings. The total of this labor, expressed in direct labor hours, is the capacity of the pattern shop.

A survey of the lathes, mills, and other machinery will result in the productive capacity of the machine shop, which is expressed in machine hours. The use of direct machine hours as an expression of capacity, and as a basis for distributing overhead charges is due to two considerations; first, some machines, such as gear cutters, are automatic, and after being set up to operate with little attention while the operator devotes his time to other work; and second, because the differences in size, power consumption, and investment values places different hourly operating costs on each.

From the accounting viewpoint the forming department is similar in character to the machine shop. The machinery is of a different type for forming, welding, perforating, etc., steel plates, sheets, bars and so on. The machine hour is the unit for expressing the capacity of this department.

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The productive capacity of the assembly shop, in which the operations are manual, will be determined by a survey of floor space, benches, and handling equipment, and will be expressed in direct labor hours.

As the engineering department cannot process a greater volume of work than the plant can turn out the capacity of this department is based on the capacities of the other producing departments. To arrive at an intelligent estimate of the amount of engineering work required to keep the plant working at capacity we are guided by past ratios of engineering department capacity to total plant capacity. The productive capacity of this department is expressed in direct labor hours.

Having in this way determined the maximum capacity of each department, a qualifying factor, to allow for time lost by sickness, accident, delays, etc., is applied to it to arrive at a practical statement of normal capacity. Normal capacity is called 100% capacity regardless of its relationship to maximum capacity. Normal capacity may, for example be only 80% of maximum capacity but it will be termed 100% capacity.

THE FLEXIBLE NORMAL OVERHEAD SCHEDULE

Having found the normal capacity of each producing department the planning department and the accounting department collaborate to build schedules of indirect costs required to operate each department of the plant at normal capacity, and at ten percent variations therefrom. The schedules will be supported by calculations of individual items of indirect labor and supplies, i.e. expenses which cannot be charged to specific jobs, brought together in pro forma accounts. These calculations will enable subsequent variances in actual operating costs from the budget to be analyzed very finely. The schedules for all departments will be consolidated in a master schedule. Exhibits A and B illustrate the master schedule and the departmental schedule.

Note that the schedules are drawn up at normal productive capacity and at ten percent variations therefrom. This provides a quick guide for estimating the effects of trends on profits. The departmental schedules show the method of calculating each feature of cost on the budget, making it possible to figure the standard overhead of any department at any fraction of capacity, for the purpose of distinguishing variances due to use of capacity from cost and quantity variances.

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The budget is compiled for one year. To determine the normal costs for operating the plant at the actual production for any month use the following formulae:

$$\% \text{ of capacity used} = \frac{\text{Actual hours for the month (period)}}{\text{Budget hours for the month (period)}} \times 100$$

(This formula can be used for the calendar month, thirteen month year month, quarter or any other period.)

$$\% \text{ of year under review} = \frac{\text{Budget hours for the month}}{\text{Budget hours for the year}} \times 100$$

Then the normal overhead for month at fraction of capacity actually used=

Normal overhead schedule cost at % of capacity used
x % of year under review.

Suppose, for example that the assembly shop worked 4400 hours during January, and that the budget hours for this department were 4600 for January. Then the percent of capacity used equals

$$\frac{4400}{4600} \times 100 \text{ or } 95.7\%.$$

Suppose, too, that the crane operator's wages are \$2,160.00 per year at normal capacity and at 90% capacity. Crane operator's wages will be the same, then at 95.7% capacity.

If the budget hours for this department are 54000 we are considering ——— or 8.3% of the budget year. The normal crane operator's wages for January will be

$$8.3\% \text{ of } \$2,160.00 = \$179.28$$

Certain features of cost which fluctuate seasonally such as light and heat for buildings, will not fit into this pattern. The monthly budget figures will reflect the amount of daylight, and outside temperature normal to the month under review.

The fraction of capacity worked by the stores department, in any period, will be the relationship between the weight of material handled and the budgeted weight for that period. The shipping department will be figured similarly—the weight goods shipped to budgeted weight. The expression of actual capacity

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Exhibit A

Schedule of Standard Indirect Costs Required to Operate any Department at any Fraction of Capacity

Machine Shop

	50%	60%	70%	80%	90%	100%	110%	120%	125%
Standard Capacity	51840	31104	36288	41472	46556	51840	57024	62208	64800
	56160	33696	39312	44928	50544	56160	61776	67392	70200
	55080	33204	38738	44064	49572	55080	60588	66096	68850
	\$60264	\$36314	\$42367	\$48211	\$54238	\$60264	\$66290	\$72317	\$75330
Floor Space	8000	square feet							
Cubic Volume	60000	cubic feet							
Basis of Calculating Standard Cost									
Workmen's Compensation and Employees Benefits	11%	payroll money value	3329	3995	4660	5303	5966	6629	7292
Unemployment Insurance	.095	per labor hour (total)	263	315	368	419	471	523	576
Indirect Labor	.0625	per machine hour over 70% capacity							
	.0675	per machine hour to 70% capacity	1750	2100	2450	2592	2916	3240	3564
Supplies	.10	per machine hour over 70% capacity							
	.11	per machine hour to 70% capacity	3089	3707	4324	4493	5054	5616	6178
Power	.0575	per machine hour—see schedule of power consumption	1615	1938	2260	2583	2906	3229	3552
Light	per foot of floor space—variable seasonally		192	192	192	192	192	192	192
Superintendent and Timekeeper	\$4200	to 100%—\$5100 over 100%	4200	4200	4200	4200	4200	4200	5100
Building and Machinery Depreciation	fixed—per schedule of depreciation		10450	10450	10450	10450	10450	10450	10450
Taxes—Insurance	fixed—floor space, building construction and value of equipment		1795	1795	1795	1795	1795	1795	1795
			26683	28692	30699	32027	33950	35874	38699
									40622
									41584

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Exhibit B

Calculation of Applied Overhead Rates

	Engi- neering	Pattern	Steel Foundry	Iron Foundry	Machine	Forming	Assembly	Stores	Shipping
No. Tool Requirements		320	3045	2045	6480	4480	2025	50	18445
Cubic Volume	15000	13600	95000	64000	60000	41500	18700	40000	354800
Total Labor Hours	17675	6260	87695	58880	55080	38100	17200	6480	293850
Direct Labor Hours	17160	6260	73079	49068	51840	35862	16189	10000	249458
Machine Hours					56160				
Weight of Material Requisitioned								34000 cwt.	
Weight of Goods Shipped									61000 cwt.
Standard Indirect Expenses at 100% Capacity per Schedule	\$ 8800	\$3210	\$49378	\$32712	\$35874	\$24904	\$ 8302	\$6600	\$140000
Apportioned Departments Method of Apportionment									
Toolroom		99	944	634	2010	1389	628	16	5720
Heating	410	372	2597	1750	1640	1135	511	1094	9700
Works	2238	793	11102	7454	6972	4823	2178	820	37200
Administrative	3441	1219	17064	11464	10724	7418	3348	1261	57200
Sales	1815	662	7740	5191	5485	3794	1713		26400
Applied rate per direct labor hour	\$16704	\$6355	\$88825	\$59205	\$62705	\$43463	\$16680	\$9791	\$16272
Applied rate per cwt. of material requisitioned	.98	1.02	1.22	1.21			1.03		
Applied rate per cwt. of goods shipped								.29	.27

Applied machine hour rates are figured by machine on a supplementary sheet.

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worked of other service departments will be the ratio between total direct labor hours worked in the plant to the total direct labor hours at capacity.

SALES BUDGET

While the planning department is making its survey of plant capacity, and while the planning and accounting departments are compiling the flexible normal overhead schedule, the budget officer will also have directed the sales department to make a survey of the market potential. We assume that the plant facilities are in harmony with the requirements of the market, or if they are not, that the management will make the alterations necessary to bring that harmony about. Following the market survey, and with the flexible normal overhead schedule before them, the management, in consultation with the sales department, will determine the volume of business to be sought in the coming year. This will establish the budget level.

At the same time the decision on the profit objective for the year will be made. Fair return on capital invested, interest on probable borrowings, plant efficiency, market conditions, etc., will come under review at this time. The profit in handling material is also a consideration. That is to say, the profit of the business comes from two prime sources, the sale of labor, and the sale of material, both of which are combined to form the product required by the customer. The budget must include a fair inventory turnover.

While the budgeted cost of production and profit provide a general mark-up basis for quoting and invoicing, other factors such as competitive lists, possession of more efficient facilities for specialized work than exist elsewhere in the locality, etc., will have their individual effects on the selling prices of certain work.

The budget is a joint management-sales-accounting department achievement. It details the amount to be expended on production, the sales anticipated, and the operating profit sought. Once the sales objective has been set it is not sufficient that the sales department produce orders totalling that amount or more. They are charged with the responsibility of producing work in such balanced diversity that each department of the plant will be kept operating at budgeted capacity. They are assisted insofar as production of stock parts can be scheduled to keep production in balance to some degree, but not to the extent that inadequate or excessive inventories result.

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The budget establishes the relationship between labor cost and the sales dollar, so that normal sales income from operating the plant at any fraction of capacity can be figured, and the flexible normal overhead schedule extended to show sales income and profit or loss to be expected from operating the plant at any fraction of capacity.

SETTING THE APPLIED OVERHEAD RATES

To obtain a cost for each job overhead calculations are added to direct labor and direct material costs. Overheads for the engineering, pattern, foundry and assembly departments are applied in proportion to direct labor hours for those departments. Overheads for machine and forming shops are applied in proportion to machine hours, stores expense in proportion to the weight of material requisitioned for each job, and shipping expense in proportion to shipping weight. The rates for applying these overheads are set to absorb the cost of the other service departments, namely the toolroom, heating, works, administrative, and sales departments.

The first step in setting the applied overhead rates, then, is to apportion the costs of the toolroom, heating, works, administrative, and sales departments to the producing, stores and shipping departments. The method of apportionment is as follows:—

Toolroom—number of requisitions per year

Heating—Cubic feet of space—foundry, which is heated by its processing operations, excepted

Works—Total labor hours

Administrative—Total labor hours

Sales—Direct labor hours

There is really no entirely satisfactory method for applying sales expense to the job. Properly the expense should be distributed to the jobs on a basis of the service rendered to each job. But there is no relationship between the amount of sales expense incurred and the relative selling values of the jobs, their costs of production, weights, or any other characteristic. The technique of keeping informed of requirements of customers, especially those involving considerable capital expenditure, and of putting specialized sales engineers to work on the leads eliminates any intermediate distribution by territories.

Certain direct selling expense is charged directly to job costs as will be explained later, the balance we have chosen to

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apportion to production departments on a basis of direct labor hours because the sales department is expected to secure a certain quantity of work for each department, that quantity being so many direct labor hours of work.

Using the above methods then, the costs of operating the toolroom, heating, works, administrative, and sales departments, as shown on the flexible normal overhead schedule at normal capacity, are apportioned and added to the costs of the six producing departments, and the stores and shipping departments at normal or 100% capacity. We have now set up the cost of operating the entire business at normal capacity as costs of operating the eight departments on which overhead is collected.

The applied overhead rates for the engineering, pattern, foundry, and assembly shops, is now found by dividing the costs of operating each of these departments as shown above by the number of direct labor hours representing normal capacity of each. These are direct labor hour rates.

When we consider the machine and forming shops we find that, due to varying requirements of the machines (mainly floor space, capital investment, and power consumption) each machine must be treated as a separate cost centre. The gross costs of operating each shop are analyzed by machine. The rate to be borne by each machine is obtained by dividing the cost of operating it by the number of machine hours representing capacity. These rates are machine hour rates.

The total weight of material to be delivered by the stores department during the year, divided into the cost of operating that department gives the rate per hundred weight for applying stores expense.

Likewise the weight of material to be shipped during the year divided into the cost of operating the shipping department gives the rate per hundredweight to be applied to job costs for shipping overhead.

THE VARIANCE ACCOUNTS

When the budget was compiled emphasis was placed on the careful planning of every phase of the business. Insofar as business proceeds according to plan no further action is demanded of management. The operating ledger and operating statements which record the indirect expenses of the business,

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are set up to disregard those activities which proceed as planned and to throw into relief departures from the budget.

The operating ledger consists of a "budgeted expense" account and a long series of variance accounts designed to reveal as closely as possible the points at which actual costs vary from the forecast. There is a "capacity variance" account for each department which will reflect the efficiency of sales and production management policies; a "material cost variance" account to reflect the efficiency of the purchasing department; and a quantity variance account for each feature of indirect material or service expense, and a rate variance and time variance account for each feature of indirect labor for analyzing the efficiency of departmental operations.

The budget is compiled for a yearly period, but by applying the formula stated above we get a set of budget figures for each month.

At the close of the month the fraction of capacity actually worked by each department can be determined, and by reference to the flexible normal overhead schedules it is possible to determine what each expense item should be for the work done.

And during the month we have recorded actual expenses.

So we have three sets of figures—the budget—a statement of normal overhead at the fraction of capacity actually worked—and the actual indirect expenses. The next step is to oppose these figures to one another in such a way as to reveal the variances. This can be explained by the following illustrative journal entries.

To record budget indirect expenses:

Dr. Budgeted expenses (a single account)

Cr. Capacity Variances (an account for each department)

To record standards at capacity worked:

Dr. Capacity Variances

Cr. Indirect labor time and indirect material quantity variances.

Cr. Uncontrollable variances

To record actual hours at standard rates:

Dr. Labor Time Variances

Cr. Labor Rate Variances

To record actual hours at actual rates:

Dr. Labor Rate Variances

Cr. Wages Payable

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To record material requisitioned at standard costs:

Dr. Material Quantity Variances

Cr. Material Cost Variances

To record material requisitioned at actual costs:

Dr. Material Cost Variances

Cr. Inventory.

To record depreciation, insurance and other items beyond the control of departmental heads:

Dr. Uncontrollable Variances

Cr. Reserves for Depreciation, Prepaid Expenses, etc.

The labor time, labor rate, material quantity, and uncontrollable variances will be kept in the same detail as the expenses which appear on the flexible normal overhead schedule. Schedule A has been condensed for clarity of illustration. In actual use many more accounts will appear.

Material cost variances reflect the efficiency of purchasing and, if an analysis is required it will be by types of material and period of purchase rather than by cost distribution and period of consumption. This could have been obtained by charging purchases into inventory at standard costs and setting up the cost variances when the purchases were made. However the effect would have been to state the inventory at standard rather than actual value, and to misplace in point of time, the profit or loss implied in the variances. A recapitulation of the differences between actual and standard prices as shown on accounts payable invoices will present timely information on material costs.

DIRECT METAL COSTS

The pattern followed to reveal variances between direct steel metal and direct iron metal, actual and standard costs, up to the pouring stage, is parallel to that used for indirect expenses. It will be necessary here to outline only the method as it applies to steel.

The accounting department, in collaboration with the foundry chemist and supervisor, compile a schedule of standard costs for melted steel. The capacity of the furnace is used as the unit on which preliminary calculations are made, but the final figures are expressed as cost per hundredweight of steel. One basic schedule is compiled for mild steel, as other forms of steel castings produced are variations from the mild steel formula in

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respect to alloy content only. As other elements of cost are not affected it is feasible to apply the mild steel schedule of costs to all steel castings, making adjustments for direct material in alloy castings.

A schedule of standard mild steel costs appear in schedule H.

The standard is used for costing metal posted to job cost cards. The foundry reports daily the weights of castings produced and the jobs for which they are made. The monthly totals of these reports multiplied by the standard cost provide the amount of the entry charging job costs and crediting "steel metal applied".

"Steel metal applied" is an account in the subsidiary "steel metal" ledger in which the actual cost of steel metal is collected from payroll distributions, foundry material returns and the accounts payable register.

If the "applied" credit is broken down into the cost items as shown on the standard steel metal cost schedule, and in the same proportion, and the resulting component standard costs compared with the actual figures the net balance in the steel metal ledger will appear as a number of material and labor cost variances.

JOB COSTS

On receipt of an order the order clerk writes up the details on a job slip form. The actual instructions for writing up the job may come from the sales or estimating department, or from the engineering department who may have been consulted in drawing plans prior to the estimate, or the order clerk may be familiar with the requirements of the order and write it up without assistance. Besides detailing the requirements of the order the job slip also relays invoicing and shipping instructions. The job slip form is printed and written up in duplicating ink and copies are made and distributed to each of the departments concerned in any way with the job. Job slip copies for different departments may be identified by color.

The cost department copy is duplicated on the back of a cost card form to provide a convenient reference when accounting for cost elements and in invoicing.

When their copy is received the engineering department draws plans and material bills, distributing copies to each of the

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departments requiring them. The stores department delivers the material specified in the bills to the shops indicated thereon, and directs one copy to the cost department. The production departments use their copies as check lists to see that they receive the material they require, and the cost department uses their original copy to see that the stores department copy is forwarded to them.

As each producing department completes their portion of the job and turns it over to the next producing department or to the shipper, they turn in their copy of the job slip to the cost department who place it on a temporary file. When the completed job has been delivered the shipper turns in his copy with a notation as to the method of shipment and shipping weight. Receipt of the shipper's copy by the cost department is notice that the job has been completed. All copies of the job slip and material returns are assembled, costs summarized and the invoice made up. Provision is made for invoicing shipments of part jobs prior to completion of the whole by having copies of shipping advices forwarded to the pricer. Periodic comparisons between cost cards and shipper's job slips are advisable to assure complete invoicing.

Costs for each job are collected on a separate cost card which provides for postings of direct costs, calculations for applied overheads, details of shipments, invoices, and profit made on the job. See exhibit I for the form in which this information is collected and summarized.

Direct labor costs are collected on a subsidiary cost card, actually a part of the larger record. The separate card provides needed space and facilities division of labor in posting. Columns are provided for posting labor hours and amounts and machine hours by shops.

Material weights and standard costs are posted to the principle cost card from material returns.

Weights of steel and iron castings are posted from returns received from the foundry which detail the scaled weight of castings and the jobs to which they should be charged. Symbols indicate alloy castings. For summarizing to determine work-in-process or cost of sales, the casting weights are extended by standard prices and adjustments made for alloys.

Direct accounts payable charges are the result of purchases for specific jobs. Details of suppliers, and goods or services purchased, and purchase order numbers are written up on material

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bills which are scanned before the costs are closed out, to assure that all voucher charges are recorded. Besides the above mentioned goods and services, prepayment of freight is also treated as a direct job cost. This is a concession to practical convenience as prepayment of freight is recovered on the customer's invoice, where it is treated as a revenue from the job. Prepaid freight, appearing as it does as a cost and a revenue does not influence the amount of job profit. Wherever freight is prepaid it is noted by the shipper on his copy of the jobslip and inclusion of the charge in the cost of the job is assured when that copy is examined in the process of closing out the cost card.

Applied overheads are based on direct labor hours, direct machine hours, stores material weights, and shipping weights. By multiplying the direct labor hours for the engineering, pattern, foundry, and assembly time, and the direct machine hours for the machines in the machine and forming shops, by the rates established by the flexible normal overhead schedule at 100%, we obtain the amount of the applied overhead for those shops. This is done for each job for the labor and machine time posted to it. Applied stores overhead and applied shipping overhead are charged according to the weight of the requisitioned material and shipping weights and the rates established by the schedule of applied overhead rates

Applied overheads are figured at the end of each month, and at the completion of each job, and the calculations posted directly to the summary portion of the cost card.

It will be seen that labor, material, and purchase invoice charges are controlled figures, labor charges being in balance with payrolls, material in balance with summaries of material returns, and accounts payable charges in balance with the accounts payable register. However the sums of the calculations of the costs of castings and applied overheads on cost cards, when reconciled with calculations based on monthly totals for castings produced, payroll labor and machine hours, and total stores and shipping weights, will result in minor variations to be absorbed by adjustments in the monthly journal entries charging job costs control.

The amount of spoilage is influenced mainly by the type of work. It is therefore appropriate to charge spoilage to individual jobs rather than to an overhead account. The greatest percentage of spoilage expense is due to defective castings which

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may be discovered in the rough stage or during machining. Cost of repairing defective castings or other work is charged as direct labor to the specific job. When replacements are required the salvage value of the scrapped material is written up on a "credit for material returned to stock" memorandum charging the stores account and crediting the job, while replacement material and labor is charged against the job by requisition. Where excessive costs are incurred due to spoilage (or for any other reason) the shop foreman states the circumstances on his copy of the jobslip, which statement is used in accounting for the difference between actual and estimated cost. If a defect in a casting is discovered after the foundry has reported its portion of the job completed, issuance of a supplementary jobslip may be called for to keep the records straight. Generally, however, matters of this kind are taken care of informally between shop foremen.

JOB COST SUMMARIES

It has been stated that costs are summarized on the face of each cost card at each month end, and at the completion of each job. We must now make a summary of all jobs to prove our balance with the general ledger, and to provide the necessary figures for the entries transferring completed work to sales and cost of sales, and adjusting work in process and sales billings to current figures. This is done at the end of each month under the following headings:

Job	Number	This Month Cost - Invoices	In Process Last Month End Cost - Billings	In Process This Month End Cost - Billings	Transfer to	
					Profit and Loss Cost of Sales	Sales

The first seven columns will be used for jobs in process at the month end. Columns one to five and eight and nine will be used for summarizing completed work.

It should be noted here that "sales billings" is a liability account representing invoicing on Work-in-Process, on which profit cannot yet be determined. The sales register credits "sales billings" rather than "sales", which receives the credit at the same time the cost of a job is charged to cost of sales.

COMPARISONS OF ESTIMATED AND ACTUAL JOB COSTS

The above entries provide a statement of job profit made each month, but the principle established with the setting up of the budget, indicates that this figure is of less importance in the management of the plant, than a statement showing where the

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variations between the actual and planned profit occurred and why. This means we must analyze the differences between estimated and actual job costs.

It has been said earlier that estimates are not made with the scientific thoroughness with which a standard is set. Allowances for "contingencies" are consistently provided and almost as consistently required. Therefore we are not justified in incorporating estimates in the ledger accounts, and comparisons must be presented on statements compiled independently of the financial statements. They are none-the-less important and thoroughly analyzed.

Preliminarily to the final statement analyses of estimates are compared with similar analyses of actual costs and the difference for each feature for each job noted. Insignificant variations are then eliminated. The final statement presents only the significant variations for management's attention. An investigation into the causes for the differences is made by the cost accountant in consultation with the estimators, engineering department and plant foremen, and his conclusions noted on the statement. These notes provide clues to estimating and manufacturing inefficiencies and frequently suggest improvements.

STOCK JOBS—EXPENSE JOBS—SALES OF STOCK MATERIAL

The system outlined to this point has been confined to manufacturing goods for specific orders. While this type of work is by far the most important activity of the business mention must be made of the manufacture of goods for stock, and for internal use, and sales of material direct from warehouse stock.

Because it is good business to manufacture certain standard pieces of equipment used frequently in assembling machinery, or certain standard lines of merchandise, in greater quantities than called for on individual orders, these parts and lines are manufactured in economical lots and placed on warehouse shelves until required. These items are requisitioned by the stores department and orders placed in the shop in exactly the same manner as customers orders. When completed, the work is delivered to the stores department. The accounting treatment differs from customer's work only in that the jobs are numbered with their own series and identifying prefix, and applied shipping overhead is not collected, and when the jobs are completed they are charged to inventory.

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A second type of work not undertaken on customer's orders is expense work, the forging of chisels for foundry chipping guns, for example. These jobs are handled similarly to work for stock, except that on completion they are delivered to the departments requiring them, and they have their own series of numbers and prefix symbol. Production department, administrative, and stores, overheads only are charged to these jobs.

Orders received for material which can be supplied from warehouse shelves directly are handled by the accounting department the same as shop jobs, allowing for there being no shop work on them. Direct sales orders, similar to jobslips are written up and delivered to the stores department to be filled. The shipper and cost department receive copies too. The stores department copy serves as a requisition, and after the order is filled, is sent first to the perpetual inventory clerk, and then to the cost department. The shippers copy, after the job is filled is sent to the cost department as advice of shipment when the order may be costed, invoiced and closed out.

A special form of cost card is used as the cost elements are fewer. A special series of numbers and identifying prefix identify these orders. Stores, and shipping overheads are added to the cost of the material.

The technical imperfections will be noted here—one, sales overhead is included in the cost of goods made for stock, and is therefore set up in inventory, and, two—sales overhead is not collected on unmanufactured material sold from warehouse shelves. This results from our selection of the direct labor hour method as the basis of apportioning sales expense, and would have been avoided if we had chosen the cost or sales value method. The relative money value involved is insignificant, however.

CONCLUSION

It has been said that a budget cannot, nor is it intended to supplant executive skill, and that the effort to consistently foretell the future is a futile one, due to the ever-changing factors over which there is no control. What the budget does do, however, is to co-ordinate executive effort, commit them to certain objectives, and hold them to their commitments. The budget is the best way to gain control over as many known factors as possible and to reduce the adverse effects of the unknown variables.

The White Collar Employee and Unions

By ERIC G. TAYLOR, Assistant Manager,
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"A closer look at the average union leads one to the conclusion that it is not so much a question of unions being coldly efficient as to the fact that they are smart enough to take advantage of management's mistakes and inattention." With these rather significant remarks, the author sets forth the conditions which are leading to the unionization of office personnel and the techniques which are used by the unions to organize.

These comments are submitted for your consideration and criticism because of a personal conviction that the most important problem facing business management to-day is employee relations. One of the more complex and challenging aspects of this problem is that which involves the relationship between the managers and those who are being managed in the modern business office.

At the outset I should like to make four general propositions, which in effect are my conclusions. I shall then attempt to justify these propositions by remarks which relate to each of the four points.

1. Ours is a society of groups. Of late there has been an increasing tendency on the part of citizens confronted with like problems, who have similar fears and interests, to "herd" together into groups.

2. The non-supervisory "white collar" employees are becoming group conscious. They are arriving at the conclusion that as a group their interests and problems are akin to those of the wage earner.

3. These employees are evidencing an interest in unions and are joining unions. Unions are interested in them and are organizing them.

4. Management which has accepted unions and is dealing with unions representing wage earners, seems to be hesitant about accepting and dealing with unions of "white collar" employees.

Our society and our nation is compounded of many groups all of which have a joint interest in our national well being.

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However each group has well defined problems and interests of its own. The basic character of our complex social structure tends to encourage such grouping. We are witnessing to-day the formation of many new associations of people who undergo similar experiences, who share similar interests and who face like fears and pressures.

Perhaps history will record us as a generation of joiners for certainly on every hand one sees new groups whose aims are laudable and serious as well as groups with aims which are laughable and silly. We even have groups being created which if they become powerful enough would take away from us our right to join an association of our own choosing. The birth rate of this type is unfortunately higher than the death rate.

Our modern industrial and business organizations are complex and divided into numerous zones and levels. Many of the people in the various divisions and sub-divisions have joined together in associations devoted to their special interests. One of the unorganized and disassociated groups of people is the mass of men and women who constitute what is commonly referred to as the "white collar workers".

The expression "white collar worker" was originally coined in reference to those persons employed in offices of business and industry who, by the nature of their work, were distinguishable from those who wore overalls and performed the grimmer and more arduous jobs in the factory. Of late the term has been used to include, in addition to office and clerical employees, salesmen, professional and technical employees, retail store clerks and other classes such as teachers and musicians. My remarks in the main concern that group which most people have in mind when speaking of "white collar" personnel—the non-supervisory office and clerical employee.

These people form a large and rapidly growing class—a class between the usually better educated and better paid professional and technical employees, such as engineers, actuaries and accountants, and the less educated but better paid production employees.

On both sides of them they see their fellow employees forming into groups and engaging in group action. Most of the professional and technical men belong to professional or technical societies. The majority of office people are denied admittance because they fail to meet basic educational and other

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requirements (although in some companies many of them perform similar duties). On the other side of them they see the extent to which production employees are organized. They are not particularly interested in becoming part of the production group, but some of them are a little fearful that they will be drawn or driven into it. Aware of what is going on around them, they are beginning to realize that they too have much in common as a class and are rapidly becoming group conscious.

There are a number of aspects which are characteristic of office and clerical employees as a class. They have a younger average age than production employees. Compared with people in other occupational groups, relatively few of them are over 45 years of age. Only the most senior of them have had a work experience long enough to include a period of recession or relative unemployment. Throughout most of their working life, wages, salaries, prices and the cost of living have all been rising. The majority of them are women. In the average office there are far more women than men in non-supervisory positions. Perhaps the office unions of to-morrow will be composed almost entirely of women.

Another important aspect has to do with the nature of their work. The relative attractiveness of the work is dependent upon semi-economic and social considerations such as the duties they will perform, the work environment and the degree of social prestige which the job has in the organization and in the community. Other considerations such as sick leave with pay, vacations and hours of work have lost much of their significance due to the fact that the gap which separated them on these issues from the payroll employee has practically disappeared.

The more they talk about it the more they realize that as a group they are akin to production employees. They, like their payroll fellows, are dependent upon others for a job, for a chance to make a living. The average salary is only enough to meet the demands of a very moderate standard of living. Little is left for savings. They live face to face with the hazards of unemployment and the risk of dependency in their old age. It is quite evident therefore that their outlook on life and their stand on many of the social and economic problems of the day will be similar to that of the production employees.

It is unrealistic to suppose that the very important gains resulting from the unionization of factory employees would

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escape the notice of office employees in all types of enterprises. Particularly is this true of industrial organizations where there is a close and daily contact between the office and the plant. Many of them have brothers, sisters and other relatives who are members of unions and therefore invidious comparisons are made within the family relationship. Not all of the gains credited to unions, or for which the unions claim credit, have been made by unions, but the office employees are inclined to give the unions all the credit anyway.

I do not want to give you the impression that in my opinion the non-supervisory office and clerical employees are all union conscious and are standing with open arms waiting to embrace—or be embraced by—unions. I suggest, however, that there is ample evidence to support the conclusion that these people are becoming group conscious, are comparing their lot with that of fellow production employees and that they may be ripe for organization by unions.

Why may they be ripe for organization by unions? I think one of the fundamental reasons is, of course, an awareness of their interests and problems as a group. Then, secondly, they sincerely believe that they have been neglected by management and have not been treated as well as the unionized payroll employees. Next comes a reason which grows out of the first two. They believe that a union offers them a medium through which they can be allied with labour, rely upon its strength and processes to achieve gains for them and yet permit them to retain their own identity as a group with an organization of their own devoted to their special needs and problems.

The unionization of this group will be slow by comparison with the unionization of the production employees. There is a lot of confusion shared alike by unions, management and the employees themselves as to what constitutes an appropriate bargaining unit. At the outset it is rarely clear to any of them who should be in the unit and who should be excluded. While a few organizers are familiar with office situations most of them are not too well versed. They are apt to be governed by their factory experience where there is a clear line of demarkation drawn between the foreman and the production personnel. In so many instances there is no such clearly defined separation between supervisory and non-supervisory positions in the office. The duties of a number of people involve elements of both.

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Another factor which deters unionization is the traditional relationship of the office employee and his employer. In the past it has been on a rather intimate and personal basis. The office employee has lived in hope of personal recognition and advancement. He still hopes he is part of the pool from which replacements for the management team are drawn. But that hope is beginning to be dimmed somewhat. Specialization in the modern office seems to have made it necessary to bring in more "outsiders" who possess special education and skills for certain supervisory jobs. Office employees are more often in possession of confidential information and frequently perform duties which are closely associated with a managerial function.

There used to be a stigma associated with belonging to a union but that is fading fast. The very word "union" seemed to suggest picket lines, street fights and violence, but now, for some of the office employees, it is beginning to spell recognition, higher salaries and fair treatment.

The two principal international unions concentrating on "white collar" personnel are the C.I.O.'s United Office and Professional Workers of America and the A. F. of L.'s Office Employees International Union. The former is not very active in Canada but the latter has 25 locals in this country. In addition we have the Office and Professional Workers Organizing Committee of the Canadian Congress of Labour and units of the National Catholic Syndicates. However, the largest number of organized office employees are covered by agreements with unions, which also represent payroll employees, such as the United Mine Workers, the Steelworkers and Automotive Workers.

The modern "white collar" union makes skilful use of up-to-date advertising and public relations techniques. The leaflets and publicity material are well prepared and well received. In contrast to the early days of factory unions, they do not indulge in inflammatory rabble-rousing attacks on management. Instead of denouncing management they rather tend to strike a note something like this: Your company is a good company and it is looking after its production employees and its customers, but is neglecting you, the "white collar" group. They emphasize the point by telling the office employees that they are the "forgotten men and women" or that they are the "orphans of labour". They draw attention to what they consider to be a

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disparity between the earnings of the office employee and the earnings of the unionized payroll employee.

The organizing techniques vary with the union. Some unions, the C.I.O.'s United Office and Professional Workers, have an announced strategy. A resolution passed at 1948 convention of the U.O.P.W.A. reads in part as follows: "In the main, new organization should be directed toward expansion in the insurance field, the technical and scientific divisions in key geographic areas, banking and finance in selected cities, in the news distribution field and in commercial offices." By way of explanation of this concentration on certain industries and specific localities, leaders of this Union state: "In the insurance, social service, technical and scientific fields, in banking and commercial offices, there are historical salary inequities under which 'white collar' workers have laboured."

The strategy of the A. F. of L.'s Office Employees International Union is announced as being a desire for unionization of all non-supervisory employees, especially the "white collar" worker. To that end representatives of the O.E.I.U. seem to be prepared to take part in forum discussions, radio programmes, extension courses and other activities which help to spread the gospel of unionism.

I am making no attempt to deal here with all of the organizing techniques, but some of them may be of interest. First, the organizer makes contact with carefully chosen employees in the Company. In cases where he cannot make suitable contacts the union arranges to have one of its own members secure employment. The next step is to get together a small group of disgruntled employees and create a committee. Its main function is to form the nucleus for further organizational activity. Sometimes such a committee adopts the title of "salary committee" or "grievance committee". This committee takes up some current case or situation which is causing friction and brings the matter before the employer. No matter what the disposition of the grievance is, the committee uses it to further its organizing work. If the employer refuses to deal with the grievance committee then they say: "He refuses to recognize us because we are not certified as the bargaining agent. When we are organized into a union he will have to deal with us." If the employer does meet with the committee and it makes a satisfactory settlement it can then point to this accomplishment and

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say: "See what has happened on this one grievance, you can see how much better off we will be when we have a union."

Another technique is the distribution of a leaflet or the posting of notices which simply read: "You are going to get a salary increase *soon*." This prediction is made on the basis of the union's experience. The union argues that either the employer will grant an increase in order to discourage employees from joining the union or else an increase will be granted later as a result of the union's bargaining efforts on the employees behalf—and they are usually right.

The procedure adopted by the union is governed by the organizers assessment of the attitude of the employer toward unions as well as the attitude of the office employees. If he encounters lack of interest or apathy he then adopts a standard public relations technique, that is, to create an acceptance of his organization in the minds of his public, the office employees, just as in public relations it is necessary to sell the institution as well as the product it markets. The organizer is required to sell the idea of a union as well as the advantages of one.

Let us take a brief look at the three main issues—salaries, seniority and grievance procedure:—

In November, 1941, the introduction in Canada of the Wages Control Order had the effect of freezing wages and the salaries of non-supervisory personnel unless it could be demonstrated that they were low by comparison with the wages or salaries prevailing for comparable work in the community. Concurrently, we witnessed a tremendous expansion of unions. Thousands of production employees were unionized. In a period of relative full employment, despite the Wages Control Order, which remained in effect until 30th November, 1946, wages rose at a rate unprecedented in Canada. Following lifting of wage controls they rose even more sharply. That collective bargaining was responsible in a large measure for the tremendous rise in wages is obvious.

Collective bargaining played little or no part in salary determination however. Apart from a few minor exceptions office employees were not represented by unions. The expanding office staffs were populated largely by persons with little or no previous work experience, certainly few of them were members of unions. In keeping with traditional experience salary levels rose more slowly than wage levels. It is true that some com-

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panies, after wage controls were lifted, did grant office employees an increase equivalent to that granted wage earners concurrently with the wage increase. In the meantime, however, even in those few industries, as well as industry generally, salaries lagged behind wages.

Without attempting to deal with the question as to whether the present relationship of salaries to wages is equitable, I submit that salary levels rise at a slower rate than wage levels and they also fall at a slower rate. The fact is that they lagged behind wages in an era of union expansion and are now low by comparison with wages at a time of great labour strength. This development is having the effect of stimulating the unionization of the people who earn salaries — the office and clerical employees.

The seniority issue is not so stark. Here, I am sure there has been an effort on the part of most employers to give the more senior employee a promotion when he was qualified to do the job. It is more a question of potentiality playing a greater part in management's assessment of the employee than is the case in the factory. Then too, so often the office employee is unaware of the factors which are evaluated by supervision.

Few offices have a formal grievance procedure and in most cases there is not a strict adherence to the "line organization". In the factory the grievance goes from foreman to supervisor, superintendent, factory manager, etc., but in the office—don't you agree?—it is apt to skip a rung or two. In some companies while they have a personnel man for the factory employees, the personnel job for office employees is supposed to be taken in his stride by the office manager who frequently is too busy and too inexperienced in these matters to cope with the problems.

Employers and employees are no longer the economist's abstractions "capital" and "labour", nor is the problem of their relationship simply a conflict of economic forces. Capital is not the cartoonist's fat man who smokes cigars and wears a top hat, nor is labour the grimy handed worker in overalls. In the modern labour relations picture capital is replaced by a group of managers who range in rank from president to office section head, labour in addition to the hourly rated employees includes all those being managed both in the factory and in the office. Office and clerical employees are labour in that sense.

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Unions regard them as labour and believe that the unionization of the "white collar" group is a completion of the organization cycle which started with the formation of the early craft unions.

The office and clerical employees are beginning to consider themselves as an extension of labour rather than an extension of management.

The law, and by that I suppose we can say the public, considers them to be persons who have the right to be represented by trade unions. For collective bargaining purposes the labour laws in Canada do not distinguish between these employees and manual workmen.

Management then must examine its own point of view. Traditionally and for good reasons, it has held to the belief that because of the nature of their work and their working conditions, office employees were an extension of management. Possibly there has been a tendency to emphasize the differences between "white collar" employees and wage earners rather than examine and study the similarities. In this connection I would draw your attention to the mechanization which has taken place in the office beginning with the introduction of the typewriter. To-day the modern office has automatic bookkeeping machines, computing, duplicating, card sorting and many other office machines. Mechanization in terms of routine and repetitive office machine operation, particularly some of the recording and tabulating work done in large offices has tended to blur or confuse some of the distinctions between office and production work.

The fact that office employees are in personal and direct contact with senior management is of prime importance. The employees who belong to factory unions have practically no personal or direct dealings with top management. Management's desks are not on the production floor—they are in the office. Office employees in close proximity see how the company is run on a day-to-day basis at close range. They type your letters, see your reports and file your records and correspondence. They are in a position to know how you react to labour relations situations when they arise in the factory. They see how you conduct yourselves in an emergency both as individuals and as a group.

